

A NEW CALIFORNIA POLYPHYLLA WITH NOTES
CONCERNING THE VARIABILITY OF CERTAIN
CHARACTERS WITHIN THE GENUS

(Coleoptera—Scarabæidæ)

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Polyphylla barbata Cazier, new species

Relatively small, robust; head black, clypeus rufous, elytra dark blackish-brown; head, clypeus and pronotum densely clothed with long brown hair, elytra sparsely clothed with long brown hair. Head densely, shallowly punctate, punctures separated by only one-third to one-fifth their own widths; entire surface densely clothed with long brown hair; margins around eye and clypeal suture rather densely clothed with elongate, pointed squamæ, middle of front devoid of squamæ; clypeus densely, shallowly punctate, feebly concave, side margins narrowed at base, expanded to apical angles which are rounded, apical margin transverse, slightly prominent medially, surface densely clothed with long brown hair, margins somewhat densely clothed with uniform elongate, pointed squamæ, middle portion devoid of squamæ; maxillary palpi with third segment the same length as first, longer than second, bluntly pointed on inner side, without impression; antennal club three times as long as funicle, about twice as long as head. Pronotum about twice as long as head, and about twice as wide as long; side margins serrate, obtusely angulate at middle; quite closely, shallowly punctate, punctures separated by about their own widths, a long brown hair arising from anterior side of each puncture; median depressed line densely clothed with elongate pointed white squamæ; oblique sub-lateral basal vittæ sparsely, irregularly clothed with elongate, pointed white squamæ; side margins sparsely clothed with elongate, pointed yellow squamæ, remainder of surface with only an occasional isolated elongate squama, basal margin densely clothed beneath with long yellowish-brown hair. Scutellum with median and lateral vittæ composed of short, narrow squamæ. Elytra three times as long as pronotum, widest at apical third; surface slightly rugose, ornamented with three irregular, more

or less broken, discal vittæ and sutural stripe, besides the short vittæ which extend from the humeral umbones and are continued posteriorly in the form of disconnected spots; squamæ of the vittæ white, one-third as wide as long, those of the interspaces yellow, narrower, more pointed and less dense than those of the vittæ; entire surface uniformly, sparsely clothed with long brown hairs which are most abundant on humeri. Anterior tibiæ bidentate, all tarsi shorter than the tibiæ; thoracic sternites densely clothed with long brown hair; basal abdominal sternites black, apical one and one-half segments dark brown, sparsely clothed with white squamæ except along posterior margin of each segment where they are more densely arranged; long brown hair uniformly, sparsely scattered over all segments; pygidium uniformly clothed with short brown hair. The slender yellow scales are more dense in the middle and at base, sparse laterally. Male genital segment sinuate just posterior to the narrowly expanded tip, cleft for less than one-half its length.

Length 20 mm., width 9.7 mm.

Holotype male in the author's collection. Taken at Mt. Hermon, Santa Cruz Co., California, June 25, 1937, by Dr. J. J. du Bois to whom the author is greatly indebted for the privilege of studying and making known this distinct species. Ten designated male paratypes bearing the same data as the holotype, seven of which are deposited in the collection of J. J. du Bois and three in the author's collection. Two male paratypes collected at Mt. Hermon, California, July 7, 1922 (sand hills) in the collection of the California Academy of Sciences. The female is unknown.

The series before me presents little in the way of variation except in color. One of the paratypes is light brown as in *sobrina* but does not vary from the type otherwise. All remaining paratypes are almost exact duplicates of the holotype.

In Casey's key (1914) to the species of North American *Polyphylla*, *barbata* will key out with *opposita* from which it differs by its generally darker color, more robust form, longer antennæ, shape of lateral margins of clypeus which are contracted at base in *barbata*, longer and more dense hair on the clypeus, head and pronotum, the presence of long brown hair on the elytra, the reduced number of scales on the clypeus, head and pronotum, the irregular sutural white line, the shorter tarsi and the smaller size. The type locality of *opposita* was given by Casey as "Oregon (a single example is so marked but per-

haps erroneously)". I have in my collection one male specimen that matches the description of *opposita* in every detail but it was collected at Tuba City, Arizona, July 3, 1937, by Mr. R. P. Allen. From *adusta*, which is the next species to follow in Casey's key, *barbata* can be distinguished by the presence of long hair, the bicolored squamæ on the elytra, the smaller size, long antennal club, long and smooth last maxillary palpal segment and by the male genitalia which are more dilated apically in *barbata*.

When Fall's key (1928) is used, *barbata* will key out with *rugosipennis* and *sobrina*, due to Fall's use of the relative length of the antennal club prior to *diffracta* and *opposita*. From *rugosipennis* it can at once be separated by its small size, more irregular elytral vittæ, long hair on pronotum and elytra, shape of lateral margins of clypeus which are contracted basally in *hirsuta*, irregular distribution of squamæ on pronotum and by the genitalia which is cleft for less than half its length. From *sobrina* it can be distinguished by its smaller size, narrower form, presence of long hair on pronotum and elytra, generally darker color, shape of clypeus which does not have the lateral margins contracted basally in *sobrina*, and the irregular elytral vittæ.

During the course of this study it has become apparent to the author that many of the characters used in separating groups and species in the keys are unreliable as specific or group differences and it is with this in mind that the following remarks on variability are given. These remarks are not made with the intent of disabling the existing keys or to reflect on the work of others but merely to point out to future workers that when based on long series of one species some of the characters are variable and should be used with care. No attempt will be made to construct new keys as the material at hand is insufficient. It is the author's opinion that when a proper study is made a long series of each species will have to be available for study and it is hoped that the notes herein given will be of use in supplementing a study of this nature.

In both Fall's and Casey's keys one of the primary characters used is the dentition of the anterior tibiæ. The tridentation is used to separate *cavifrons* and *hammondi* from the

remainder of the species. Within a series of male *hammondi* from Patagonia, Arizona, there are numerous specimens that have no sign of the proximal tooth and others in which it is either slightly evident or prominent. Among the so-called bidentate species the males of *arguta* are frequently tridentate as has been shown by others. The presence or absence of erect hair on the disk of the pronotum is another character used to separate major divisions. In a moderately long series of *rugosipennis* that were all collected at the same time, under the same conditions and that were not rubbed there are specimens with evident long erect hair and others in which there is no sign of hair. This species does not, however, have many erect hairs so that it is not surprising that some should lack them completely. In *arguta* the males sometimes have very definite erect hair on the disk which makes it very difficult to place this species since it is associated with those that do not have the hair. When the long erect hairs are as abundant as they are in *barbata* and *hirsuta* Van Dyke, I think there is little doubt as to their being specifically constant and of use both in defining the species and in a key.

The squamose vestiture in this genus has been used in various ways. The size, shape, color and arrangement of the squamæ has been used to separate certain species and is undoubtedly of some use in certain cases, but if a series of *decimlineata* from one locality is examined it will be found that the large squamæ of the pronotum and elytra grade gradually into fine narrow squamæ and then into hairs. This is true in a series from Davis, California, that are at hand. In Fall's key one of the characters used to separate *speciosa* from *decimlineata* is that the short line of white scales behind the humeral umbone is continued disconnectedly posteriorly in *speciosa*. In the set of *decimlineata* before me there are both males and females that have the line continued posteriorly. In one male specimen the vittæ are obscured on the basal half of the elytra by an almost continuous mass of squamæ occurring in the so-called interspaces. This gives the vittæ a very ragged appearance and since other species show a good deal of variation along this line the regularity of the vittæ should be used with care also.